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EDITORIAL

Memory, sedation, and recovery in the ICU: what should we do better?

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The intensive care unit (ICU) is a place of survival, but also of profound psychological vulnerability. The study by Kooken et al. [1] examined factors that shape ICU patient memories and their correlation with post-traumatic stress symptoms over time. Their findings underscore that patients' recollections, particularly 'delusional memories', are not mere psychiatric ephemera but clinically salient phenomena with lasting consequences for identity, recovery, and long-term mental health [1].

Nearly 40% of survivors reported 'delusional memories' three months post-discharge, and these were independently associated with a 3.5–5-fold increase in persistent post-traumatic stress disorder (PTSD) symptoms at 12-months [1]. This contrasts with earlier emphasis on ICU amnesia as the dominant predictor of distress and PTSD [2]. As expected, patients exposed to prolonged deep sedation experienced more amnesia. While amnesic patients experienced slightly higher PTSD rates (5.5%) than those without amnesia (3.5%), these rates were modest compared with the 12-month symptom burden in those reporting 'delusional memories' at 3 months (18.1%) [1].

ICU delirium can share features with 'delusional memories'—fear, distorted perceptions, and a belief that caregivers intend harm [3]. Yet only 41% of patients screening positive for delirium later reported 'delusional memories'. Screening tools are imprecise and confounded by sedation [4], and not all phenomena labelled as 'delusional memories' are psychosis-related. The term 'delusional memories' can be misleading in this context. These vivid and emotionally charged recollections may reflect the brain's attempt to make sense of fragmented experiences under sedation and stress, rather than true delusions. They encompass hallucinations, nightmares, and vivid dreams [5] Patients describe being shackled, abducted, or trapped—experiences that feel real and leave lasting emotional scars [3]. Beyond their distressing nature, they predict longer-term psychological morbidity, and the term 'delusional memories' may not fully capture the complexity [5].

Survivor accounts illustrate these distortions—even when delirium screens were negative throughout the ICU stay—highlighting the limitations of current tools. Better tools to evaluate cognition and perception in sedated, ventilated patients are urgently needed. Trials of structured reassurance, requiring patients to be awake enough to communicate, remain limited, though evidence from surgical cohorts suggests accompaniment and reassurance can reduce delirium incidence and duration [6]. At the same time, a balanced clinical perspective is essential. Deep sedation is sometimes unavoidable and lifesaving—e.g., in patients with an open chest, those receiving severe ARDS care including proning with neuromuscular blockade, those with refractory agitation who are at risk of self-injury, or when complex interventions are required where immobility and ventilator synchrony are paramount [7]. In these cases, deep sedation often reflects illness severity rather than discretionary practice. The challenge lies in avoiding deep sedation where it is not clinically necessary and mitigating its psychological consequences when it is [7].

What should we do better?

- Clarify terminology: 'Delusional memories' is an imprecise umbrella term. A clearer taxonomy distin-

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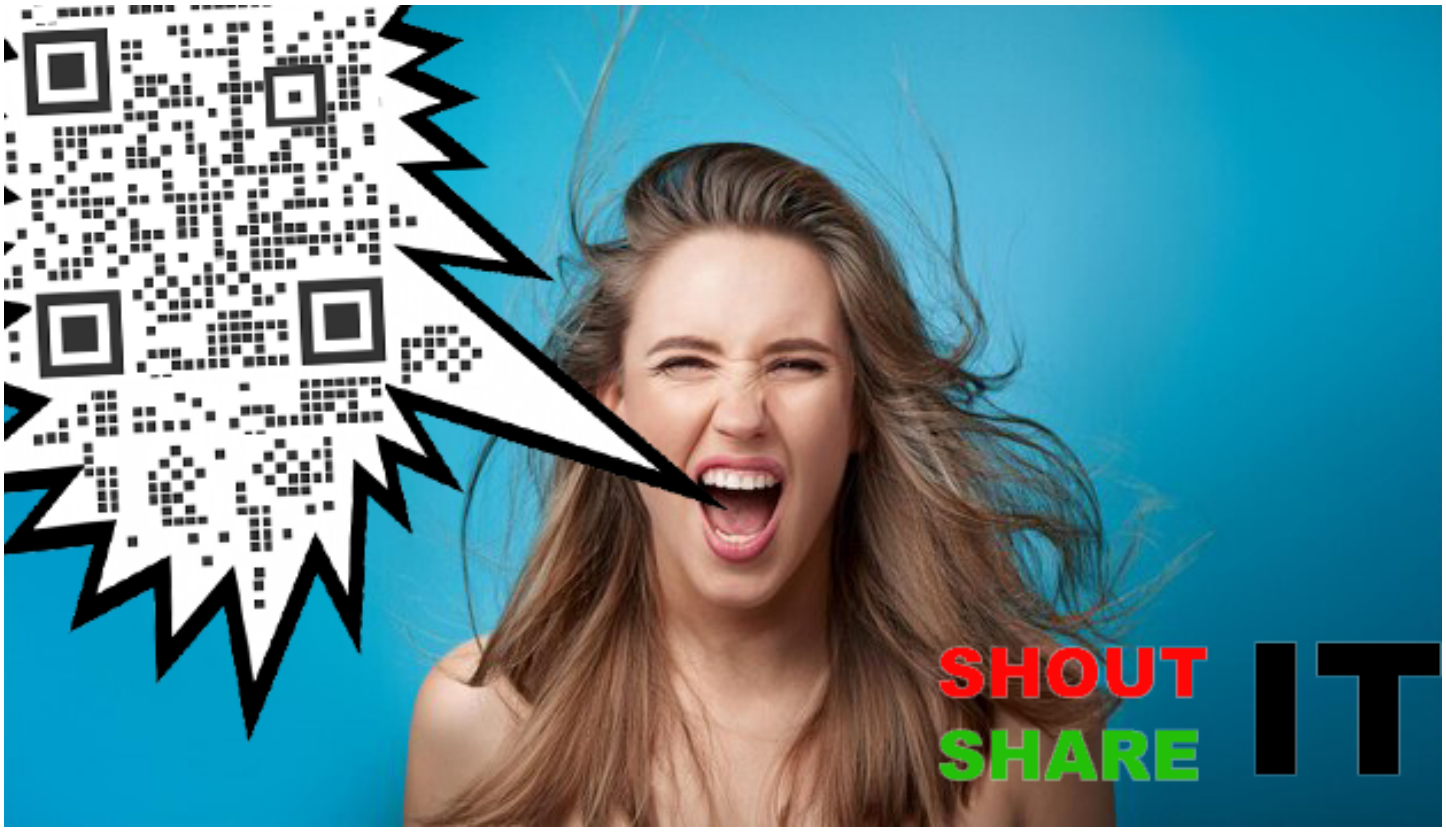
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guishing hallucinations, intrusive recollections, and trauma-like appraisals would improve research and communication.

- Improve diagnostic tools: conventional delirium screens miss salient phenomena in sedated patients. Cognitive-perceptual assessment should be sensitive to sedation effects and specific to experiences predicting distress.
- Optimize sedation practices when feasible: analgesia-first strategies, titration to light sedation, daily sedation assessment, early communication and reassurance, and early mobilization—implemented within realistic staffing models—are pragmatic steps [8, 9].
- Support memory processing: ICU diaries, where staff and family document events and care, help patients reconstruct fragmented experiences and reduce distress [10]. Randomized trials show diaries can lower PTSD risk and improve psychological recovery [11]. Their integration into routine care offers a low-cost, high-impact intervention [11].
- Embed follow-up pathways: psychological screening, education, and access to support for survivors and families should be standard components of post-ICU care [12].

There are limitations of the Kooken et al. study that warrant emphasis. Less than 30% of eligible patients participated, and fewer than 60% of participants completed the 12-month-follow-up, raising concerns about selection and attrition bias. Responders tended to be more severely ill and to have longer ICU stays, which may distort associations. The IES-6 tool is a validated screening tool for symptoms, not for a clinical diagnosis of PTSD, so reported prevalence reflects symptom burden rather than confirmed diagnoses. Delirium detection is imperfect and confounded by sedation exposure, and the observational design limits causal inference. These caveats do not diminish the clinical importance of patients' recollections, but they call for caution in interpreting absolute rates and for more rigorous epidemiology.

Memory in the ICU intersects with sedation, mobilization, and discharge planning [8, 13, 14]. It shapes psychological outcomes, physical recovery and self-perception [15]. Memory is, in many respects, a vital sign of recovery. 'Delusional memories' are not just strange stories—they are markers of distress that predict longer-term harm and offer interventional opportunities [5]. The present study reassures that lighter sedation, when feasible, is psychologically safe and reinforces the need to reframe sedation not as a default, but as a modifiable parameter with long-term implications.

Progress will come from clarity of definitions, better measurement, realistic practice change, and robust follow-up. Our task is not to eliminate deep sedation where necessary, but to avoid it where it is not—and to systematically mitigate the psychological consequences of critical illness for those who survive.

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Declarations

Conflicts of interest
The authors declare that they have no conflict of interest.

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